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# **Southern Africa's Beira Corridor: A Vulnerable Route**

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**A Research Paper**

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*ALA 87-10001  
January 1987*

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# **Southern Africa's Beira Corridor: A Vulnerable Route**

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**A Research Paper**

This paper was prepared by [ ] Office  
of African and Latin American Analysis. It was  
coordinated with the Directorate of Operations.  
Comments and queries are welcome and may be  
directed to the Chief, Africa Division, ALA, [ ]

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**Southern Africa's  
Beira Corridor:  
A Vulnerable Route**

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**Summary**

*Information available  
as of 15 December 1986  
was used in this report.*

The prospects of sanctions and countersanctions in southern Africa have intensified discussion of the Beira transportation corridor as an alternative to Pretoria's rail and port network. The Beira corridor consists of the Indian Ocean port at Beira, Mozambique, and a railroad, a road, and a petroleum pipeline that lead from Beira approximately 300 kilometers (km) to the Zimbabwean border. It connects with the regional rail and road network and is the shortest and potentially cheapest outlet to the sea for central Mozambique, Zimbabwe, Zambia, northern Botswana, and southern portions of Zaire and Malawi. The Beira corridor is underutilized, however, because of deterioration since Mozambique's economic collapse at independence in 1975, as well as damage caused by attacks by South African-supported Mozambican insurgents and South African commandos. [ ]

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While the facilities' promoters see the corridor as an alternative outlet for between 4 million and 7 million tons of trade that move annually from the region's black-ruled states through South Africa, we believe projections of improved capacity for the corridor are unrealistic. At present, Pretoria's neighbors cannot cease using links through South Africa without suffering major economic dislocations. Indeed, even if security improvements can offset increasing insurgent attacks to keep damage at roughly current levels, the corridor could carry, in our judgment, about half of the volume of exports and imports now sent through South Africa. [ ]

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Each of the key components of the Beira system is not only vulnerable to insurgent disruption but, in some cases, is also in need of substantial repair or expansion to offer a viable option to the region's black-ruled states. Beira port is a small and shallow river harbor that is Mozambique's second-largest port after Maputo. The Netherlands in recent years has been funding improvements to the deteriorated port facilities, but a key obstacle to wider use of the port is that it must be dredged regularly to prevent river silt from filling the entrance channel and dock areas. The port could be sabotaged most effectively by placing mines or sinking a ship in the entranceway or by destroying the essential dredges. [ ]

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The most critical component of the corridor to Zimbabwe is the petroleum pipeline, which delivers 90 percent of the country's oil imports. The pipeline is small by world standards but modern and well maintained, and it is underground for almost the entire length. Exposed components include

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the storage tanks at Beira and Mutare—which would be expensive and time consuming to replace and without which the pipeline's capacity would be reduced dramatically—and the pumping stations at Beira and Maforaga—which are essential for the line to function and would take about three months to replace [REDACTED]

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The single-track, narrow-gauge railroad is the economical choice for moving heavy bulk goods, while the two-lane, asphalt road is the only alternative means of transporting dry cargo through the corridor. Zimbabwean crews have renovated about one-third of the rail line to handle more, longer, and faster trains, and they are scheduled to complete repairs to the entire line in 1987. The road is in good condition except for about 50 km across the Rio Pungoe flats where flooding has washed away the surface and closes the route for about six weeks early each year. [REDACTED]

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From a security standpoint, the Beira corridor has attracted increasing attention over the past nine months. At present, the system is under attack by Mozambican insurgents and threatened by South African commandos, while at least 10,000 government and Zimbabwean troops have been positioned to help secure the system. Looking at the key factors:

- Attacks by the South African-backed guerrillas have intensified since April 1986, following a virtual lull for two years after Pretoria and Maputo signed a nonaggression pact in early 1984. Nonetheless, users of the corridor consider the present level of attacks manageable, and the government has not yet begun to organize road convoys or put guards on the trains as it has done to keep open several threatened routes elsewhere in Mozambique.
- The corridor is only 500 km from the South African border and within range of raiders infiltrating by air or sea. [REDACTED]

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[REDACTED] Past actions indicate the damage that South Africa could inflict. Pretoria's commandos destroyed navigational buoys and oil storage tanks at Beira harbor and demolished a major road bridge over the Rio Pungoe in 1981 and 1982.

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[REDACTED]

In our judgment, Zimbabwe and Mozambique must soon take additional security precautions if use of the corridor is to remain at present levels. We believe that insurgent attacks, which now appear to be at the highest level since Zimbabwe sent troops to help guard the pipeline in November 1982, are likely to continue increasing during the November-to-March rainy season that hinders government operations. Moreover, we agree with users of the facilities that South African raids are likely if Zimbabwe participates in sanctions against Pretoria and if substantial trade is diverted from South Africa to the Beira corridor. The additional Zimbabwean troops now arriving in the corridor will improve security somewhat, but better protection for key facilities will also require expensive and time-consuming measures such as more defoliation, fencing, lighting, minefields, and sensors. Moreover, Zimbabwe's need for foreign military assistance, if it is to continue protecting the corridor and conducting counterinsurgency operations in Mozambique, has created an opportunity that we believe Moscow will exploit soon to establish an arms supply relationship with Harare. [REDACTED]

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US aid to the Southern African Development Coordination Conference—a regional grouping of nine black African states—has been used in part to rehabilitate locomotives and repair sections of the Beira railroad. We believe that US economic assistance to the region encourages stability and development and reduces opportunities for Soviet meddling, but investment in the Beira corridor remains extremely risky. Losses probably are unavoidable, although they can be reduced if projects are judiciously selected and incorporate protective measures wherever feasible. [REDACTED]

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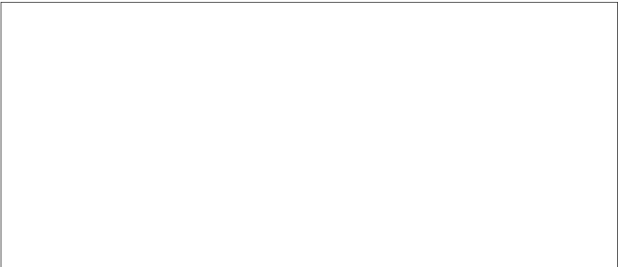
**Southern Africa's  
Beira Corridor:  
A Vulnerable Route**

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**Introduction**

The Beira transportation corridor consists of the Indian Ocean port at Beira, Mozambique, and a railroad, a road, and a petroleum pipeline that run about 300 km (186 miles) to Mutare, Zimbabwe. It is the shortest and potentially cheapest outlet to the sea for central Mozambique, Zimbabwe, Zambia, northern Botswana, southern Zaire, and—via a connecting rail line—southern Malawi. For most of these countries, the only feasible alternatives to the Beira corridor are the longer, more costly, and politically vulnerable routes through South Africa. Nonetheless, the Beira route currently is underutilized in part because of mismanagement and deterioration since Mozambique's economic collapse at independence in 1975 and because of intermittent sabotage by the South African-supported Mozambican National Resistance (RENAMO) and South African commandos.

The prospect of sanctions and countersanctions that would close the South African border and disrupt between 4 million and 7 million metric tons of black African trade annually adds urgency to the multinational effort to develop the corridor. According to US Embassy reporting and the press, about 90 percent of Zimbabwe's external trade, 70 percent of Zambia's imports and 40 percent of its exports, and over half of Malawi's trade now transit South Africa and would have to be diverted if such sanctions are imposed



**Facilities and Development Efforts**

From the perspective of the region's black African states, the Beira corridor offers in theory one of the best possible alternatives to other, longer routes to the sea that do not pass through South Africa. The alternatives to Beira are:

- The northern rail route from Malawi to Mozambique's port of Nacala uses one of the finest deep-water harbors in Africa, but sections of the railroad have been closed for years due to deterioration and insurgent attacks. It is being rehabilitated with aid from Western Europe and Canada, but a new 250-km segment still must be built to connect it with Zambia and other links throughout the region.
- Mozambique's southern Limpopo rail line from Zimbabwe to Maputo crosses flat country with few bridges and utilizes Mozambique's largest port, but it is nearly twice as long as the Beira link and perilously close to the South African border. Two attacks by Mozambique's RENAMO insurgents have closed the line for 21 of the last 26 months,
- Tanzania's Tazara railroad, road, and pipeline and Zaire's Voie Nationale rail-river-rail route are not under attack, but they are in poor repair and are about nine times longer than the Beira corridor. The Tazara line operates at about half of capacity because of shortages of equipment, port congestion, and damaged track, while the capacity of the Zairean route—which has an average transit time of 60 days—drops during the five-month-long dry season when only half-full barges can move on the river.

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***Institutions Involved With Developing the Corridor***

*The Mozambican Government, foreign investors, and users of the corridor have formed several organizations to manage and coordinate development projects. Maputo—which owns the railroad, road, and port facilities—has formed the Beira Corridor Authority to manage the development projects. It also has formed BEIRACOR Limitada, a coordinating company located in Beira, to coordinate cooperation with foreign interests. BCG Limited, registered in Harare, represents business interests in Zimbabwe and other states that use the route. IBG A/S, registered in Oslo, Norway, represents participating business interests in the Scandinavian states.*

*This growing bureaucracy threatens to snarl rehabilitation efforts in red tape. Potential private investors have told US officials of numerous delays in getting Maputo or Harare to approve proposed projects. A proliferation of organizations is likely to compound the delays and frustrations of would-be investors.*

- A rail line from Zaire through Angola extends to the port of Benguela on the Atlantic Ocean, but Angolan insurgents closed the western two-thirds of the line in 1976. The railroad has deteriorated badly and would need substantial repairs.

Even so, actual reliance on the Beira corridor is heavily conditioned on the security of the system's key facilities and the quality and ability to upgrade existing infrastructure.

**The Port of Beira**

Although Beira is Mozambique's second-largest city and port, the small and shallow harbor can handle only about 2.5 million tons of dry cargo and 1 million tons of petroleum products per year.

Shippers recently said that the port handles only several hundred thousand tons of dry cargo

annually because of mismanagement, untrained workers, limited capacities of the railroad and road, and insurgent attacks. Local authorities have stated that they hope to increase port capacity to 3.5 million tons of dry cargo in three years. Only one oil tanker at a time can discharge at the port, but that is sufficient for the current and projected volume of oil deliveries.

The key weakness of the port—located at the mouth of the Rio Pungoe—is that silting from the river requires regular dredging of the entrance channel and dock area to permit relatively small ships of 25,000 tons or less to enter. Port authorities are deepening the Beira channel from 6 to 9 meters to accommodate 50,000-ton vessels, but we believe that they are unlikely to meet the target date of 1987. One of the port's two dredges, for example, was inactive and the other was in Maputo when US officials visited Beira in October 1986.

Recently announced plans by the Swedish Government to spend \$8 million to rehabilitate these navigation aids at Beira, as well as at Maputo and Nacala, may ease the problem.

Port facilities—like much of Mozambique's infrastructure and economy—have suffered from government inability to replace the skills lost with the departure of the Portuguese at the time of independence in 1975. Less than 40 of the port's 50 cranes reportedly were functional in 1986, slightly more than half of the 60 forklifts were in working order, and the port had only one shunting locomotive and one tugboat. All these shortfalls caused serious delays. Storage capacity is ample for the moment but would be inadequate if traffic increased greatly.

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Substantial help from the Netherlands has allowed the port to make some improvements. For example, the Dutch have funded the purchase of diesel generators for the port's cargo-handling equipment, and [redacted] the container storage area is being expanded, [redacted]. The press also reports that the coal terminal is being enlarged to triple the current capacity of 400,000 tons annually, and four berths along the wharf are being repaired. Ten officials from the Port of Amsterdam, including a qualified harbormaster, are scheduled to arrive in early 1987 to administer Beira port for several years, according to US Embassy reporting. [redacted]

**The Pipeline**

The petroleum products pipeline is critically important to Zimbabwe and delivers about 90 percent of that country's refined oil product imports.<sup>2</sup> Mozambique also earns valuable foreign exchange from operation of the pipeline. [redacted]

<sup>2</sup> The remaining 10 percent of Zimbabwe's imported petroleum products are small quantities of lubricants and aviation fuel that are brought in by rail or truck, mostly through South Africa [redacted]

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Figure 3. Petroleum pipeline control room, Maforga, Mozambique [redacted]



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[redacted] rehabilitation, but its storage tanks are used to hold oil products delivered by the pipeline until they can be moved on by rail or road. [redacted]

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The pipeline is mostly underground about 1 meter deep, but exposed components include a tank farm and pumping station at Beira, a second pumping station at Maforga near the midpoint of the line, and storage tanks and a control station outside Mutare, Zimbabwe. Unmanned facilities include 26 valves, at least 11 cathodic protection stations—which retard corrosion—spaced irregularly along the route, and a metering station near the border. The two nearly identical pumping stations are essential for the operation of the pipeline, and each has three main electric pumps and three slightly less powerful diesel pumps as backups. [redacted]

Managers of the pipeline plausibly claim the system could deliver about 1 million tons of oil products annually if functioning optimally. In our judgment, however, current deliveries of about 600,000 tons per year are near the pipeline's practical limit. Electricity interruptions at Beira, because of insurgent attacks, have reduced capacity as the pumping station there has been forced to use backup diesel pumps instead of the more powerful electric units. The insurgents seldom cut powerlines to Maforga—which, unlike lines to Beira, do not supply a major city—and the Maforga pumping station is able to use its electric pumps. [redacted]

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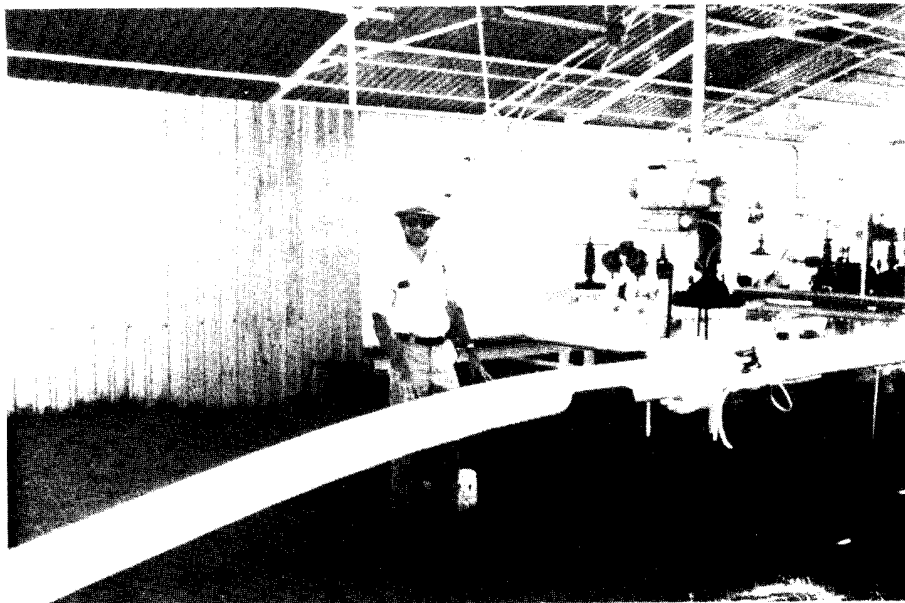
At present, the system carries only refined products. Zimbabwe's only oil refinery at Feruka, the pipeline terminus, has been closed since 1965 when the British Government prevailed on the owners of the Beira pipeline to shut down to comply with UN economic sanctions against Rhodesia. The refinery has not reopened because, [redacted] expected profits would not justify the high cost of

The line is equipped with nonreturn valves to minimize spillage from sabotage or accidents, but the current need to clean the pipeline requires leaving the valves open. Because of a shortage of storage tanks at Beira, since a destructive South African raid in December 1982, petroleum products pumped through

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Figure 4. Petroleum pipeline terminus, Mutare, Zimbabwe



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the pipeline have not been able to settle long enough to remove impurities before being pumped. The resulting accumulation of sludge in the line must be cleaned from the system weekly by a scraping device, and the nonreturn valves must be left open to accommodate the device. Once construction of five new tanks is completed at Beira next year, the nonreturn valves can be used and spillage resulting from insurgent attacks reduced. [redacted]

#### The Railroad

A 314-km (195-mile), narrow gauge, single-track railroad connects Beira with the Zimbabwean border, where it joins with the Zimbabwean rail network. Although it is the economical choice for moving bulky and heavy cargo, its single track constricts operations. The line deteriorated greatly after independence in 1975, but according to US Embassy reporting, the Zimbabwean and Mozambican railroad authorities agreed last year to rehabilitate the line on a priority basis. The Zimbabweans had nearly completed their portion by August 1986 and later agreed to complete the entire job by early 1987 because the Mozambicans had been able to finish only a few kilometers. [redacted]

An official involved in the Beira corridor development told the US Embassy in Harare recently that the United Kingdom has agreed to finance improved

signaling devices on the line, and that the United States has been helping to rehabilitate four steam and diesel locomotives. Nonetheless, additional traction and rolling stock will be needed to replace anticipated losses caused by insurgent attacks and because much of the equipment used on the line is leased from South Africa and presumably would be unavailable if the cycle of sanctions and countersanctions occurs. Two-thirds of the freight cars throughout southern Africa belong to Pretoria, [redacted]

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[redacted]  
Zimbabwean and Mozambican authorities expect that improvements will triple capacity of the Beira railroad to nearly 3 million tons of cargo annually by April 1987. [redacted]  
these projections are too optimistic. [redacted]

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Figure 5. Washed out road surface, Rio Pungoe Flats, Mozambique [redacted]



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[redacted] the route will not be able to carry 3 million tons of cargo annually until at least late 1989. US officials last October saw Zambian copper in a warehouse in Beira, which apparently was part of the trial shipments that began in July 1986. Trial movements by combined road and rail reportedly took a reasonable 13 days, but the first shipment entirely by rail took an unprofitable 21 days. [redacted]

Washed out portions of the road in the east—with rough surface, only one-and-a-half lanes wide, and unmarked—were noted between kilometer markers 19 and 32, and again between markers 48 and 78. This area, the Rio Pungoe flats, floods annually, closing the road for about six weeks each January or February. Repair crews were observed resurfacing the road last October, but it was unclear why they had not done so earlier during the April-to-October dry season. [redacted]

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#### The Road

The 282-km (175-mile) road from Beira to the Zimbabwean border—an essential alternative to the rail line—is completely paved and two lanes wide in most places. The US team drove it in about four hours last October, at speeds ranging from 40 km (25 miles) per hour through rough stretches near the Rio Pungoe to over 100 km (62 miles) per hour across the central grasslands and western hills. [redacted]

The team counted four bridges across the Rio Pungoe flats that appeared to be 30 meters or more long, plus 12 shorter bridges. They noted only two short bridges in the central grasslands between the towns of Tica (72 km from Beira) and Chimoio (the capital of Manica Province 190 km from the port). Between Chimoio and the Zimbabwean border there were three additional long and 13 short bridges. [redacted]

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#### The Airport

Generally ignored in discussions of the corridor, Beira airport and military airbase could be used to move selected cargo of low bulk and high value. Scheduled

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*Figure 6. Road repair crew*

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and charter aircraft provide both international and domestic service to Beira. [redacted]

[redacted] one of the three asphalt runways is jet-capable at 2,400 meters long by 45 meters wide, and the airport has standard airline cargo-handling equipment. The Soviet Union installed a new radar flight navigational aid in June 1986, according to the press.

[redacted]

#### **Vulnerabilities to Sabotage**

The Beira corridor's vulnerability to attack results in part from its location and the surrounding terrain. The route bisects RENAMO's traditional stronghold where the fast-growing and relatively strong insurgent group has been establishing bases and recruiting members since the mid-to-late 1970s. Although the Beira corridor is about 500 km (311 miles) from the South African border, Pretoria's commandos on sabotage missions have reached the area by parachuting from transport aircraft or infiltrating Beira port on rubber boats from submarines offshore. [redacted]

US observers report that for most of its length, the Beira corridor passes through sparsely populated terrain marked by thick vegetation and few side roads.

Overall, the area is difficult to patrol and ideal for guerrilla operations. The eastern third of the route runs through swampy areas and forests, while the western half climbs through increasingly rugged and densely forested hills. Only about a sixth of the route in the central region passes through savanna grasslands that can be patrolled relatively easily with vehicles or aircraft. Mozambican Government forces, however, currently have few of either. The corridor is especially difficult to protect during the November-to-March rainy season when clouds hinder aerial observation and the flooded countryside is nearly impassable to vehicles. [redacted]

In our view, saboteurs could close the port of Beira or disrupt ship traffic effectively by placing mines or sinking a vessel in the narrow entranceway. A few sustained mine attacks probably would lead insurers to cancel coverage, thereby making Beira port too risky for most shippers to enter. To block the channel, raiders could attack any vessel entering or leaving the port at the appropriate moment, or they could scuttle a ship of their own in the channel. They also could destroy navigation buoys there. Because regular

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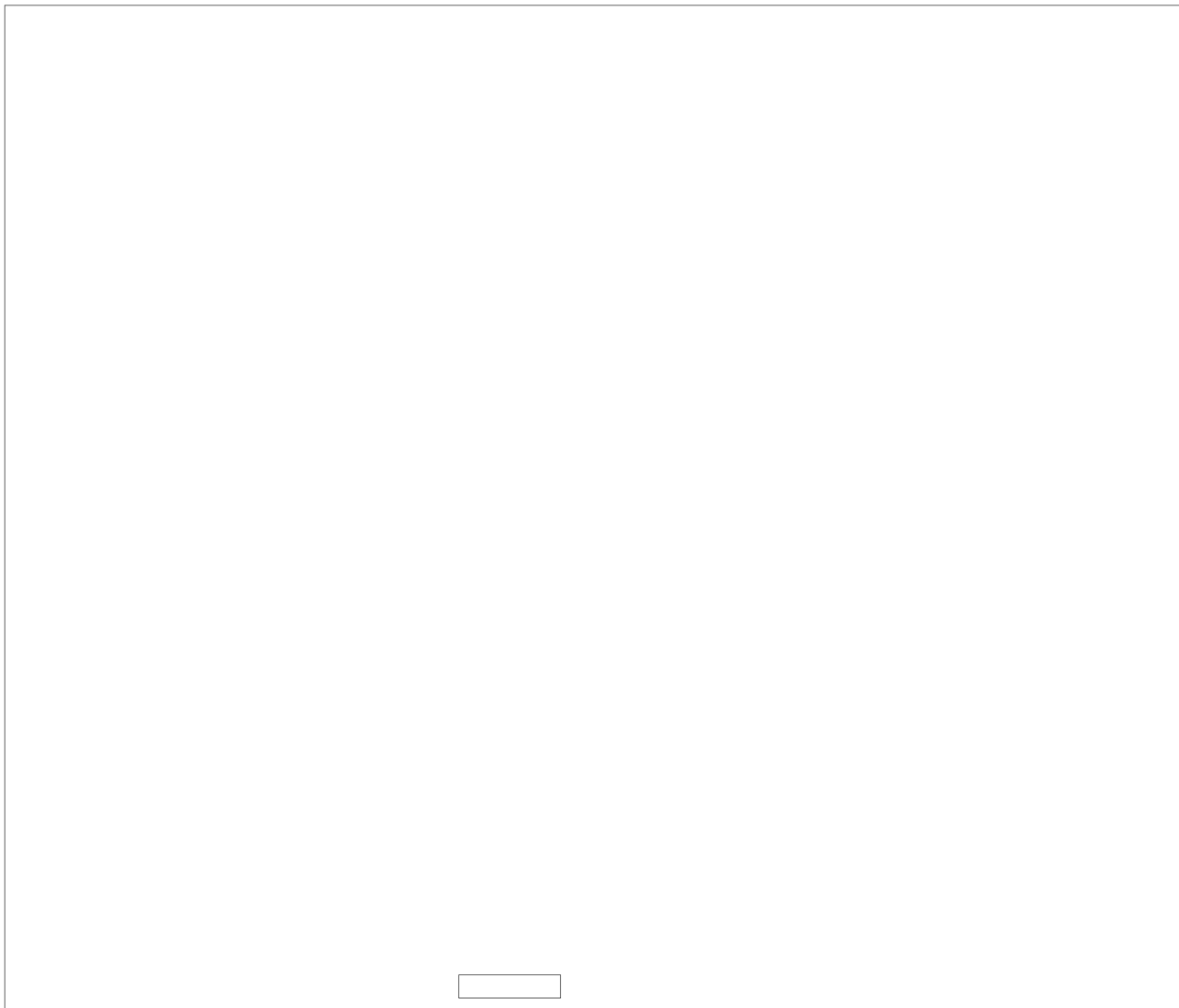
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dredging of the port and channel is necessary, sabotage of the dredges would in time force the port to close. Attacks that cut the rail, road, and pipeline links serving the port, of course, would render it useless. With its own diesel generators, however, Beira port is no longer wholly idled by the frequent insurgent attacks that have cut power to the city for about one-third of the time this year. [redacted]

In our judgment, the storage tanks at Beira and Mutare, and the pumping stations at Beira and Maforga are particularly attractive targets. A 25,000-ton tanker takes three to four days to discharge its cargo into the tanks at Beira. If the storage

tanks were destroyed, however, [redacted] that same tanker would need one to two weeks to empty its cargo directly into the pipeline, [redacted] Without the tanks at Mutare, the pipeline must empty into rail tank cars or tank trucks, which would dramatically cut the system's capacity. The pumping stations at Beira and Maforga are both essential for the pipeline to function. If they were totally destroyed, new pumps would have to be shipped from Europe, probably closing the pipeline for three months [redacted]

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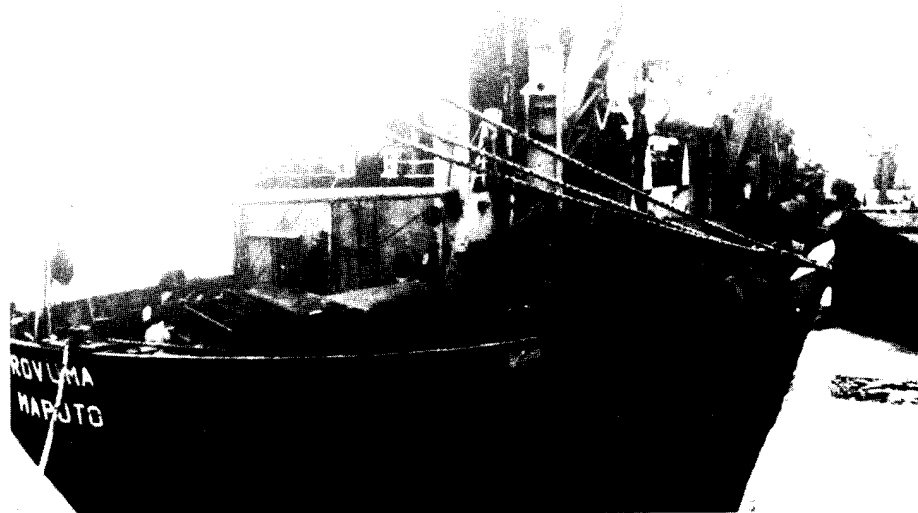
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Figure 8. Port Dredge, Beira,  
Mozambique [redacted]

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Although the pipeline is almost entirely underground, a number of facilities—26 valves, 11 or more cathodic protection stations, and the metering station near the border with Zimbabwe—are exposed. Judging from the locations of past attacks, these visible facilities help the insurgents find and dig up the line. Despite claims by pipeline officials that they can repair the damage from a successful attack within 48 hours at a cost of about \$3,000, the Government of Zimbabwe must pay much more for the spilled oil. The fact that attacks invariably take place at night, and repair crews will not go out to close the manual valves and repair the leak until daylight, raises the cost to Zimbabwe. Successful attacks in April and July this year each caused a loss of more than 1 million liters (over 260,000 gallons) of gasoline worth about \$400,000 at local prices, [redacted]

A review of rail facilities suggests that the critical points along the line include the repair and maintenance shops at Beira and near the border, the classification yards at Beira and Vila Machado, and the principal river bridges, particularly those over the Rio Pungoe flats. US observers who drove the road last

October saw three major rail bridges across the flats and learned that the line has five such bridges in that area. A destroyed rail bridge in the flats probably would have to be repaired before traffic could continue because it would be difficult to lay track across the soft and periodically flooded ground to a temporary floating bridge. Attacking the 28 locomotives available for use on the Beira link could reduce capacity and eventually stop service if they were not replaced. The insurgents could destroy the locomotives with landmines or ambushes, or cause derailments by loosening the rails. [redacted]

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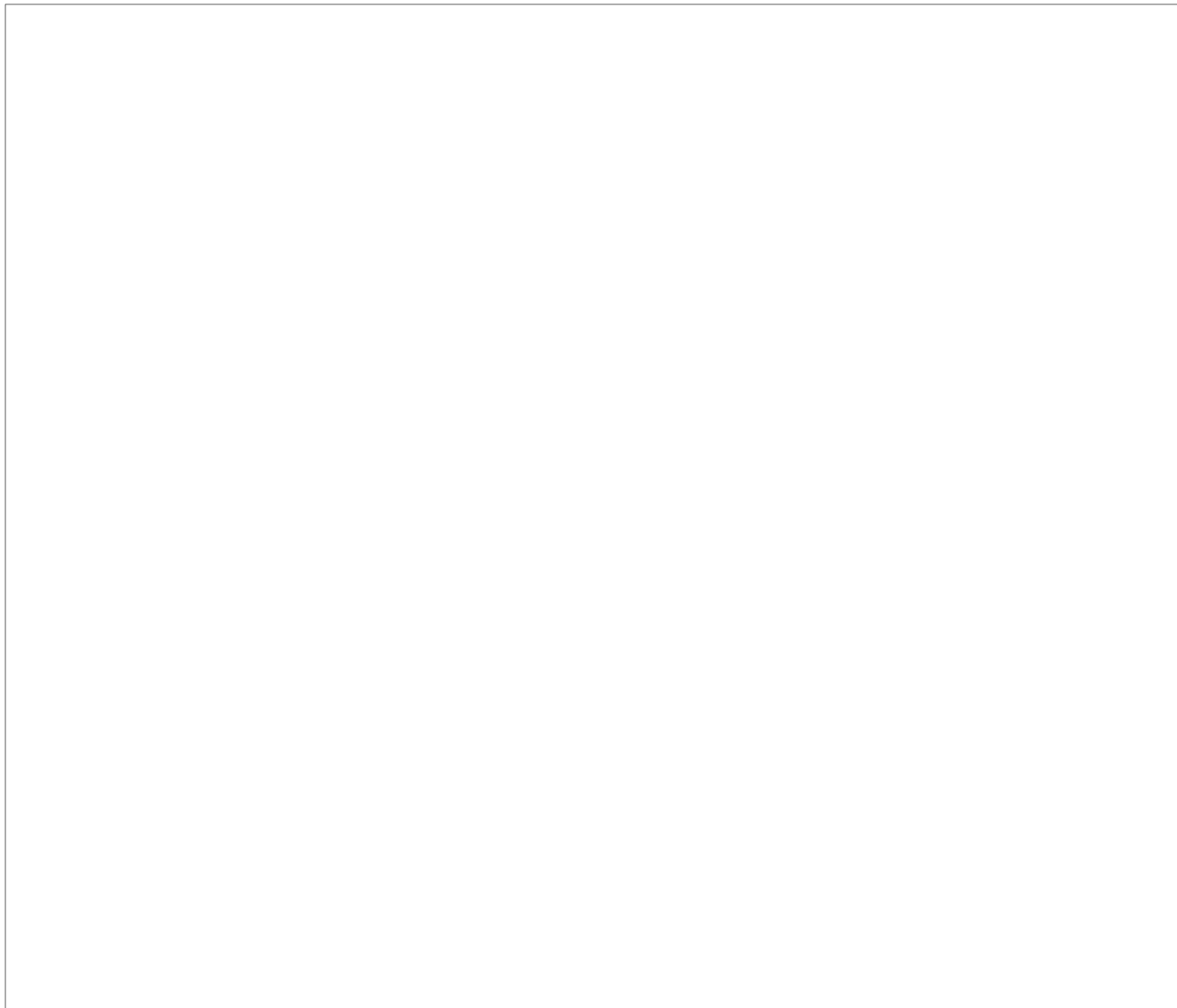
In our judgment, the road is the least vulnerable link in the Beira corridor. Nonetheless, it could be cut by destroying one of the seven long and 27 short or medium-length bridges. Most bridges are of concrete construction, although the main Rio Pungoe bridge has a steel truss atop concrete pilings. When this bridge was destroyed by South African commandos in late 1981, the Mozambican Government temporarily

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bypassed it with a Soviet-built floating bridge. [redacted]  
 [redacted] the floating bridge was still in  
 place in October 1986, although the road ramps  
 leading to it had been removed. [redacted]

insurgents could build a fire and remain on the road  
 for an hour or so indicates the route is poorly patrolled  
 at night. [redacted]

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Mozambican insurgents have recently begun to plant  
 landmines on the asphalt road despite the difficulty  
 in doing so. Local businessmen, for example, have  
 described an incident in which insurgents built a fire  
 inside an empty oil drum they had placed on the road.  
 The hot drum melted a hole through the road surface,  
 into which the guerrillas placed a landmine. That

#### **Attacks and Protection**

The Beira corridor is experiencing a rising number of  
 small attacks by RENAMO insurgents and is in  
 danger of a potentially crippling raid by South Afri-  
 can commandos. Zimbabwean forces were first sta-  
 tioned in Mozambique to protect the western portion

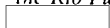
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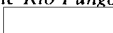
*Figure 11. Road bridge over  
the Rio Pungoe, Mozambique*



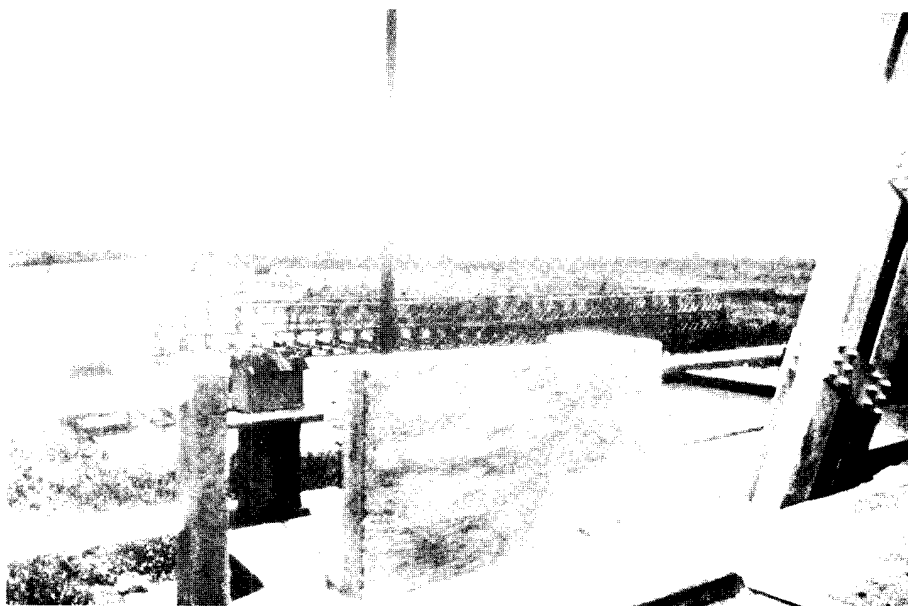
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*Figure 12. Soviet-built floating  
bridge over the Rio Pungoe,  
Mozambique*



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of the pipeline in late 1982 and now have primary responsibility for guarding the entire corridor. [REDACTED]

- There were relatively few attacks in 1983—possibly because of the Zimbabwean presence—and the Nkomati Accord signed in March 1984 marked the beginning of a virtual two-year lull in attacks on the pipeline.

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#### **Insurgent Attacks**

Insurgent attacks on the corridor have intensified since April 1986. Our analysis of reports from the US Embassy [REDACTED] suggests that such attacks are now at the highest level since Zimbabwe sent troops to help guard the pipeline four years ago:

- In the early 1980s, there was an average of one insurgent attack on the pipeline every other month. Two attacks on the Maforga pumping station in September and October 1982 led to Zimbabwe's decision one month later to send 2,000 troops to protect the western end of the line.
- To push the insurgents farther away from the pipeline and give the Mozambican Government some much needed counterinsurgency assistance, Zimbabwe rapidly increased its forces in Mozambique to about 9,000 troops in August and September 1985 and mounted an offensive that overran RENAMO's headquarters area in the Gorongosa Mountains.
- The seized rebel camps were turned over to Mozambican forces, but RENAMO recaptured the bases in February 1986.

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Figure 14. RENAMO insurgents in Mozambique



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- President Mugabe ordered his forces back on the offensive in April 1986 and again occupied the main rebel bases. Zimbabwean troops remain there today, encircled by insurgents in the countryside and re-supplied mostly by air.

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RENAMO announced publicly in September 1986 that it would never allow the Beira corridor "to function," and that it would not "authorize" foreign investments in the area.

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RENAMO clearly has not made full use of its ability to mount sustained attacks on the corridor. [ ]

[ ] this could be caused partly by the insurgents' reluctance to destroy facilities they expect to inherit one day. [ ]

[ ] RENAMO gains from allowing the corridor to function because it steals goods from the route and thus does not want to cut its own supply line. Moreover, we suspect that the pipeline company may be bribing RENAMO to moderate its attacks; [ ]

[ ]

[ ] Finally, the insurgents may believe that the corridor is of more benefit to Zimbabwe than to Maputo, and the rebels may have preferred to focus attacks on the Mozambican Government. RENAMO, however, has gradually intensified attacks on the Zimbabweans in recent months, possibly because it hopes to increase Zimbabwean casualties and costs in order to induce them to remain on the defensive along the corridor, or even to withdraw. [ ]

#### Commando Raids

The corridor system also is vulnerable to South African direct intervention. The South Africans' earliest known involvement in an attack on the corridor was in September 1979 when they cooperated with RENAMO and the Rhodesian armed forces to destroy several oil storage tanks at Beira, [ ]

[ ]

[ ] the first all-South African operation against the corridor was a commando attack on the pipeline, road, and railroad in October 1981. The principal target of the raid was the pipeline, which was about to reopen after a 16-year closure due to the Rhodesian conflict and sanctions. By destroying the center span of the major highway bridge—which supported the pipeline—over the Rio

Pungoe about 60 km northwest of Beira, the commandos kept the pipeline closed for another eight months. This commando action not only closed the road until a Soviet-built floating bridge could be assembled next to the destroyed span, but it also damaged a nearby railroad bridge. [ ]

[ ]

The last major South African attack on the corridor was the destruction of more than half of the oil storage tanks near Beira harbor in December 1982.

[ ] at least 28 tanks were demolished; local officials told visiting US observers last October that 34 tanks were destroyed, and that it took three days to extinguish the blaze. [ ]

[ ] estimated replacement costs at about \$25 million. The pipeline was closed for a month, and massive dislocations to transportation and industry resulted because Zimbabwe's fuel stocks were already low at the time of the attack. Since then, Zimbabwe has maintained two to three months' supply of various fuels as a strategic reserve. Replacement storage tanks at Beira, which will be completed in early 1987, have a lower design to present a more difficult target for a possible rocket attack.

[ ]

To our knowledge, there have been no South African attacks on the corridor since 1982. In our judgment, this is largely because of the negotiations and signing in March 1984 of the Nkomati nonaggression pact.

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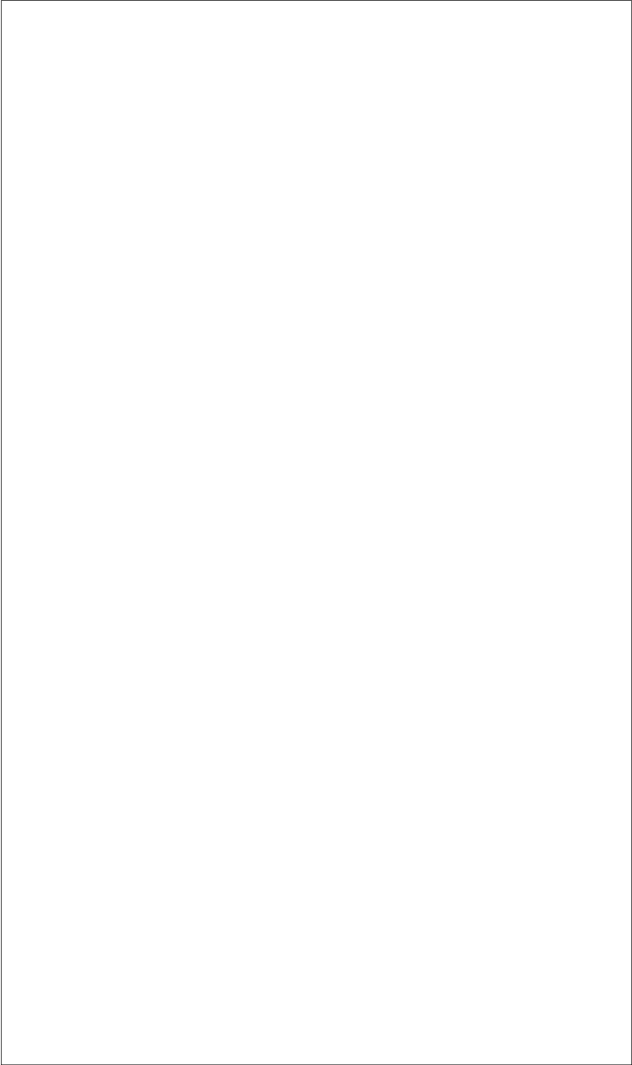
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*Mozambican Defenses.* [redacted] we estimate that Maputo has about 4,000 Army regulars and 1,000 or more militia personnel in the Beira corridor, plus two fighter-bomber squadrons and a transport helicopter squadron at Beira airbase: <sup>4</sup>

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- About 30 MIG-17 fighter-bombers and a few MI-8 transport helicopters normally are at Beira airbase, [redacted] Transports—and, on one occasion, two MI-25 helicopter gunships—have been observed at Chimoio airfield.
- A single Zhuk patrol boat and several naval speed boats protect Beira port. [redacted]

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**Protection**

In the general area of the Beira corridor, Mozambican and allied Zimbabwean troops outnumber RENAMO's guerrillas by less than 3 to 1, a ratio that, based upon historical experience, is insufficient for effective counterinsurgency operations. On average there are only about 35 government and Zimbabwean troops stationed per kilometer of corridor. While the US inspection team last October observed some troops at several larger bridges and at all aboveground components of the pipeline, troop strengths are insufficient, in our judgment, to prevent the guerrillas from disrupting transportation with ambushes, landmines, and sabotage. [redacted]

Aside from the issue of troop strength, the US defense attache [redacted] report that the Mozambican Army is woefully ineffective. It is chronically short of transport, ammunition, and food, while leadership, discipline, and morale are poor. Regular Army battalions have abandoned their bases and have fled from insurgent attacks; for example, 1,500 or more Mozambican troops deserted to Malawi in early October 1986 to escape RENAMO's most successful campaign to date. [redacted]

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<sup>4</sup> There is also an unknown number of part-time village defense personnel, but they play little or no role in protecting the transportation facilities. [redacted]

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[ ] says that militia battalions are understrength and of low quality, [ ] most aircraft are seldom moved and may not be operational. [ ]

Efforts to reorganize and strengthen the Army may bring some improvement, but only very gradually. British instructors are retraining about 150 Mozambican officers annually in eastern Zimbabwe, and the Zimbabweans have begun retraining Mozambican battalions and may provide increased logistic support, according to US Embassy reporting, [ ]

*Zimbabwean Troops.* We estimate, [ ] that Zimbabwe had about 4,000 troops in the Beira corridor in early December 1986, and that these forces presently carry the principal burden of protecting the route. [ ] suggested that Harare was sending additional units to the corridor in December, and we expect Zimbabwe to have between 6,000 and 8,000 troops there in early 1987. [ ]

[ ] Harare rotates its battalions frequently—and they vary in strength from about 300 to over 900 men per unit—but dispositions have not changed significantly in recent months:

- In the east, the US team last October confirmed that Zimbabwean guards are in Beira to protect the pumping station and oil storage tanks. They saw about 50 Zimbabwean troops at the Rio Pungoe road bridge; [ ] a battalion is in that area with a second battalion near the town of Nhamatanda.
- In central Mozambique, [ ] three battalions occupy the Gorongosa bases, another protects the pipeline's pumping station at Maforga, and another is with the Zimbabwean Special Task Force Headquarters at Chimoio.

Airborne units are mounting small operations to locate suspected insurgent camps nearby. Other forces patrol across the border from bases in Zimbabwe.

- A Zimbabwean Air Force contingent is at Chimoio airfield, and virtually all of Zimbabwe's seven to 10 working helicopters are committed to supporting the forces in Mozambique, according to the US Embassy. Fighter-bombers based in Zimbabwe have been used on occasion. [ ]

At this point all indications suggest that Zimbabwe clearly intends to maintain and is even increasing its extensive and costly commitment in Mozambique. Prime Minister Mugabe publicly declared on 5 November 1986 that his country will never permit a RENAMO takeover in Mozambique and that Zimbabwean forces will fight "to the last man" if necessary. [ ] Mugabe had agreed to a request from President Machel to send more troops, and the US Embassy reports that fresh units have begun to arrive. [ ]

Nonetheless, we believe that Harare may in time find it necessary to reduce the size and aims of its forces in the corridor. [ ]

their forces were suffering seven or eight casualties each week. Moreover, Mozambican-Zimbabwean military relations are increasingly tense, [ ] the Zimbabweans have accused their counterparts of refusing to fight and of collaborating with RENAMO, while the Mozambicans have said that their allies are arrogant and brutal. Zimbabwean commanders have long urged reducing operations to the minimum necessary to protect the pipeline, while [ ] they have complained that they lack enough troops even to do that effectively. [ ]

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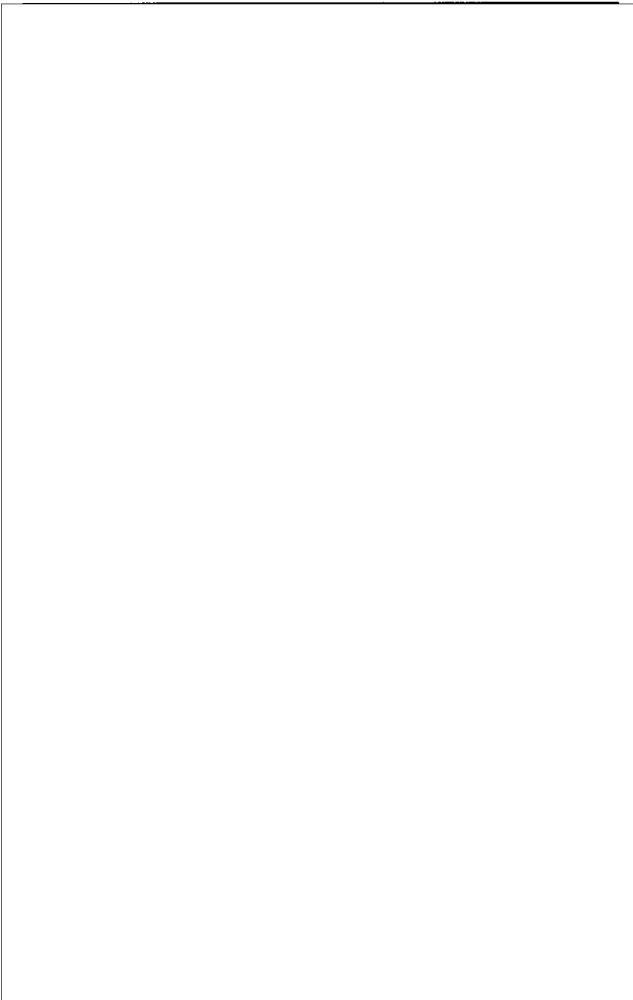
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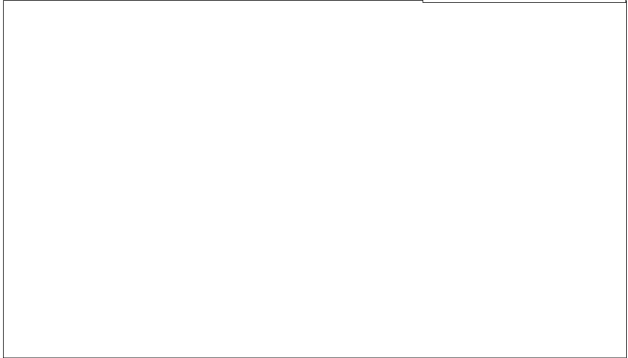


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*Other Forces.* Mozambique's neighbors—other than Zimbabwe—historically have refused to send combat forces to aid in fighting RENAMO. [redacted]



[redacted] In our view, none of the Frontline States other than Zimbabwe is likely to help protect the Beira route. The US Embassy reports that the Frontline States have also been floating proposals for a multinational force to defend transportation routes in Mozambique under the auspices of the United Nations or Nonaligned Movement, but, in our judgment, these proposals are unlikely to be realized.

[redacted]

The Mozambican Government has long been reluctant to ask for Soviet Bloc combat forces. In our view, the Chissano regime is unlikely to do so unless all other options have been exhausted and the threat to the regime has increased substantially. We judge that Moscow and Havana might react to a request sympathetically, but they would do so only after carefully evaluating conditions and prospects for success—from both a military and diplomatic perspective—at that time. [redacted]

Privately supported militia currently guard some economic sites in the corridor, but they are largely untested and contribute little to protecting the transportation facilities. The company managing the pipeline, for example, also runs a cotton plantation near Vila Machado, where a spokesman there last October said that 1,100 militia are present. [redacted]

[redacted]

[redacted] A small bauxite mining operation near the Zimbabwean border also has about 40 militiamen. [redacted]

[redacted] personnel in both units actually are Mozambican Army regulars loaned to the companies who support them. We include these soldiers in the personnel strength of Army units stationed in the corridor. [redacted]

**Prospects and Implications for the West**

In our judgment, even under optimal security conditions and with generous international aid the Beira corridor cannot be developed to handle all of the black African states' external trade that now transits South

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Africa. US Embassy [ ] reports indicate that Zimbabwe, Zambia, Malawi, and the other states currently send between 4 million and 7 million tons of dry cargo to or through South Africa each year. We estimate that the Beira route can be rehabilitated to carry about 3 million tons of cargo annually by the mid-1990s—far short of claims by some promoters that they will be able to move 4.2 million tons through the corridor each year by 1989, with higher levels predicted after that. Even if attacks on the route were to cease and development projects went forward rapidly, other links in Mozambique, Tanzania, Angola, and Zaire would have to be reopened or improved before the Frontline States could implement full sanctions against South Africa without suffering major economic dislocations. Despite these limitations, we believe a restored Beira corridor could accommodate half of the trade that would be disrupted if the South African border is closed. The shorter distance also potentially would cut transportation costs unless Mozambique violated understandings with its neighbors and raised tariffs substantially.

The current level of insurgent attacks will slow development and ultimately limit the capacities of the corridor's links, but local investors in and managers of the facilities regard it as manageable. Government and private-sector investors clearly are determined to develop the route. Far from being dissuaded by the insurgent threat, a shipping firm at the Zimbabwean end of the corridor is building a modern crane to handle 40-foot containers that Beira port does not yet accept.

[ ] Maputo apparently does not yet believe the situation warrants resorting to road convoys or putting troops on the trains, measures that it adopted long ago with some success in Zambezia, Nampula, and Tete Provinces.

In our view, local contacts of the US team last October were correct in their judgment that there is no reliable deterrent or defense against a direct South

African attack. Managers of the corridor said renewed raids would be likely if Zimbabwe participated in effective sanctions against Pretoria and if substantial amounts of trade were diverted from South Africa. Successful attacks on targets we consider most probable—ships in the harbor, oil storage tanks, pumping stations, and major road and rail bridges—probably would cut one or two links for several months at a time and be costly to repair. Although the attacks would be risky and difficult to sustain even for South Africa—primarily because of the lost advantage of surprise—they could, if successful, reduce traffic through the corridor to a trickle and compel the Frontline States to resume their reliance on links through South Africa. [ ]

On the positive side, chances of peace talks with the Mozambican rebels may have improved slightly with the death of President Machel—with whom the insurgents refused to deal. Although Chissano so far has continued Machel's military and foreign policy strategies, once he consolidates his position he may attempt to open talks with the rebels or to ease tensions with South Africa, which might improve security along the corridor. RENAMO is likely to increase attacks on the corridor during the November-to-March rainy season and attempt to consolidate its recent gains in central Mozambique. For its part, Pretoria could mount a raid at any time, but it may delay while it evaluates the new Chissano regime, awaits decisions by the neighboring states on their participation in sanctions, and gauges the pace of work on the corridor and diversions of trade away from South Africa. [ ]

Against this backdrop, we believe that Western involvement in the Beira corridor is risky, but judicious choices are likely to reduce the risks. Losses probably are unavoidable but can be lessened if protective measures are incorporated into projects wherever feasible. The increasing insurgent attacks will force Mozambique and Zimbabwe either to adopt security measures they cannot afford, or to accept much greater damage on the corridor. Although some measures could be implemented quickly and cheaply, better protection of the corridor will require expensive

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improvements to fixed defenses such as more defoliation, fencing, lighting, minefields, and probably even more troops. Likewise, relatively low-cost infrastructure improvements can help to upgrade the corridor. A project to elevate the road across the Rio Pungoe flats, for example, which would involve substantial earth-moving and some concrete construction, would increase capacity of the route and put an end to annual closures. In our view, such a project would be unattractive as a target and difficult to destroy, while also easy and cheap to repair if it were damaged. The Mozambican Government eagerly invites US and other foreign participation in developing the corridor, and all of its black-ruled neighbors are seeking alternatives to trade routes through South Africa that they fear may soon be denied them.

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